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Amdt. dated September 13, 2004
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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-42 (Cancelled)

43. (Currently Amended) A method of ~~matching a data~~ rate adaptation in a communication ~~system~~ apparatus, comprising:

~~receiving~~ providing information bit of a prescribed data rate ~~one of a variable rate bitstream and a flexible rate~~ to an encoder having a prescribed code rate ~~bitstream at a first rate to be encoded~~;

~~modifying a rate of an~~ adapting the prescribed code rate of the encoder ~~to~~ and providing coded bits, the prescribed code rate being adapted to increase coding gain ~~a prescribed rate to minimize an amount of r~~epetitions ~~that needs to occur in a rematching device and generating an encoded bitstream~~; and

performing one of repetition and puncturing of the coded bits for rate matching ~~encoded bitstream to generate a rate matched bit stream~~.

44. (Currently Amended) The method of claim 43, ~~further comprising determining~~ when ~~a~~ the prescribed data rate of the information bits changes, ~~input bitstream has changed from the first rate input bitstream has changed from the first rate and modifying~~ the code rate of the encoder is adapted ~~in accordance with the rate of the input bitstream~~.

45. (Currently Amended) The method of claim 43, wherein the adapted prescribed code rate of the encoder is one of 1/2, 1/3, 1/4, and 1/5.

46. (Currently Amended) The method of claim 45, wherein 'N' is a size of ~~the~~ an interleaver, 'I' is a number of information bits per frame, and ~~a~~ the prescribed code rate of the encoder is adapted to 1/3 when ~~8/3~~ a prescribed ratio $<N/I\leq 3$, 1/4 when $3<N/I\leq 4$, and 1/5 when $N/I>4$.

47. (Currently Amended) The method of claim 43, wherein the encoder is a turbo encoder with a maximum code rate of 1/5.

Claim 48 (Cancelled).

49. (Currently Amended) The method of claim 43, wherein ~~when an Enhanced Rate Algorithm Mode (ERAM) is enabled,~~ symbol puncturing is enabled for symbol groups having indices 2j and 2j+1 if $(j \bullet k) \bmod J < K$, wherein 'I' is a number of information bits per frame, 'J' ~~is a lower bound of~~ equals $\lfloor I/2 \rfloor$, 'N' is a size of the interleaver, 'K' ~~is a lower bound of~~ equals $\lfloor (L-N)/2 \rfloor$, and 'L' is a number of coded bits, and wherein each of the ~~code~~ symbol groups comprises L/I ~~encoded~~ coded bits.

50. (Currently Amended) The method of claim 49, wherein the information bits include data bits and a pattern used to puncture ~~data code~~ the symbol group 'i' for a 1/3 turbo code rate when $2I < N \leq 3I$ is given by $P_{(i \bmod 2)}$, wherein 'i' is an index of the ~~code~~ symbol groups and ranges from 0 to I-1, and wherein the ~~code~~ pattern to puncture symbol groups corresponding to coded bits of data bits is '110' for P_0 and '101' for P_1, where '1' indicates no puncturing of the coded bit in the symbol group 'i' and '0' indicates puncturing of the coded bit in the symbol group 'i'.

51. (Currently Amended) The method of claim ~~49~~ 50, ~~wherein a pattern used to pncture~~

~~tail code symbol group "i" for a 1/3 turbo code rate when 2I<N≤3I is given by $P_{(i \bmod 2)}$, wherein "i" is an index of the code symbol groups and ranges from 0 to I-1, and the code~~ wherein the information bits further includes tail bits and a pattern to puncture symbol groups corresponding to coded bits of tail bits is '101' for P_0 and '101' for P_1.

52. (Currently Amended) The method of claim 49, wherein the information bits include data bits and a pattern used to puncture ~~data code~~ the symbol group 'i' for a 1/4 turbo code rate when $3I < N \leq 4I$ is given by $P_{(i \bmod 2)}$, wherein 'i' is an index of the ~~code~~ symbol groups and ranges from 0 to I-1, and wherein the ~~code~~ pattern to puncture symbol groups corresponding to coded bits of data bits is '1011' for P_0 and '1110' for P_1, where '1' indicates no puncturing of the coded bit in the symbol group 'i' and '0' indicates puncturing of the coded bit in the symbol group 'i'.

53. (Currently Amended) The method of claim ~~49~~ 52, wherein ~~a pattern used to pncture tail code symbol group "i" for a 1/4 turbo code rate when 3I<N≤4I is given by $P_{(i \bmod 2)}$, wherein "i" is an index of the code symbol groups and ranges from 0 to I-1, and wherein the code pattern~~ the information bits further include tail bits and a pattern to puncture symbol groups corresponding to coded bits of tail bits is '1011' for P_0 and '1011' for P_1.

54. (Currently Amended) The method of claim 49, wherein the information bits include data bits and a pattern used to puncture ~~data code~~ the symbol group 'i' for a 1/5 turbo code rate when $4I < N \leq 5I$ is given by $P_{(i \bmod 2)}$, wherein 'i' is an index of the ~~code~~ symbol groups and ranges from 0 to I-1, and wherein the ~~code~~ pattern to puncture symbol groups corresponding to coded bits of data bits is '11101' for P_0 and '11011' for P_1, where '1' indicates no puncturing of the coded bit in the symbol group 'i' and '0' indicates puncturing of the coded bit in the symbol group 'i'.

55. (Currently Amended) The method of claim ~~49~~ 54, wherein ~~a pattern used to puncture tail code symbol group 'i' for a 1/5 turbo code rate when $4I < N \leq 5I$ is given by $P_{(i \bmod 2)}$, wherein 'i' is an index of the code symbol groups and ranges from 0 to I-1, and wherein the code pattern~~ the information bits further include tail bits and a pattern to puncture symbol groups corresponding to coded bits of tail bits is '11011' for P_0 and '11011' for P_1.

56. (Currently Amended) A communication device ~~capable of matching a data rate in a communication system~~ having a rate adaptation mode, comprising:

an encoder receiving information bits at a prescribed data rate and having a prescribed code rate for providing coded bits, wherein when the prescribed data rate changes, the prescribed code rate is adapted to increase coding gain ~~means for receiving one of a variable rate bitstream and a flexible rate bitstream at a first rate to be encoded;~~

~~means for modifying a rate of an encoder to a prescribed rate to minimize an amount of repetitions that need to occur in a rematching device and generating an encoded bitstream; and~~

~~means for performing one of repetition and puncturing of the encoded bitstream to generate a rate matched bit stream~~ a rate matching device which repeats or punctures a prescribed number of coded bits; and

an interleaver for receiving an output of the rate matching device.

Claim 57 (Cancelled).

58. (Currently Amended) The device of claim 56, wherein the prescribed rate of the encoder is adapted to be one of 1/3, 1/4, and 1/5.

59. (Currently Amended) The device of claim 56 or 58, wherein 'N' is a size of the interleaver, 'I' is a number of information bits per frame, and ~~a~~ the prescribed code rate of the encoder is adapted to 1/3 when ~~8/3~~ a prescribed ratio$<N/I\leq 3$, 1/4 when $3<N/I\leq 4$, and 1/5 when $N/I>4$.

60. (Currently Amended) The device of claim 56, wherein the encoder is a turbo encoder with a maximum code rate of 1/5.

Claims 61-63 (Cancelled).

64. (New) A rate adaptation method, comprising:

providing a first prescribed number I of information bits per frame at a prescribed data rate to an encoder;

selecting a code rate 1/n of the encoder based on a ratio of N/I, where N is an interleaver size, for rate adaptation such that the code rate 1/n is selected for adapting to changes of the prescribed data rate;

providing a second prescribed number L of symbols by the encoder, where $L=n*I$; and

matching the second prescribed number L of the symbols to the interleaver size N.

65. (New) The method of claim 64, wherein the code rate of 1/3 is selected when N/I is less than or equal to 3.

66. (New) The method of claim 65, wherein the code rate of 1/3 is selected when $N/I > 2$.

67. (New) The method of claim 64, wherein a code rate of ¼ is selected when $N/I > 3$.

68. (New) The method of claim 67, wherein the code rate of ¼ is selected when N/I is less than or equal to 4.

69. (New) The method of claim 64, wherein the code rate of 1/5 is selected when N/I is less than 5.

70. (New) The method of claim 64 or 69, wherein the code rate of 1/5 is selected when N/I is greater than or equal to 4.

71. (New) The method of claim 64, wherein the encoder is a turbo encoder.

72. (New) The method of claim 64, wherein the method is used for radio configuration (RC)4 of a physical channel for the forward link.

73. (New) The method of claim 64, wherein the method is implemented during variable data rate mode and/or flexible data rate mode.

74. (New) The method of claim 64, wherein the symbols are grouped into groups of L/I symbols such that the encoder output is from symbol group 0 to symbol group I-1 and even groups are punctured using a first puncturing pattern and the odd groups are punctured using a second puncturing pattern.

75. (New) The method of claim 74, wherein even groups and odd groups have indices 2j and 2j+1, respectively, where j=0 to J-1 and $J=\lfloor I/2 \rfloor$ and symbol groups with indices 2j and 2j+1 are punctured by the first and second puncturing patterns, respectively, when $(j*K) \bmod J < K$, where $K=\lfloor (L-N)/2 \rfloor$.

76. (New) The method of claim 75, wherein if a code rate of 1/3 is selected, the symbol groups with indices 2j are punctured using the first puncturing pattern of '110'and the symbol groups with indices 2j+1 are punctured using the second puncturing pattern of '101', where '1' indicates no puncturing of the symbol in the symbol group and '0' indicates puncturing of the symbol in the symbol group.

77. (New) The method of claim 75 or 76, wherein the information bits include tail bits, and symbol groups with indices 2j and 2j+1 corresponding to the tail bits are punctured using a third puncturing pattern of '101', where '1' indicates no puncturing of the symbol in the symbol group and '0' indicates puncturing of the symbol in the symbol group.

78. (New) The method of claim 75, wherein if a code rate of ¼ is selected and information bits include data bits and tail bits, and symbol groups with indices 2j and 2j+1 corresponding to the tail bits are punctured using a third puncturing pattern of '1011', where '1' indicates no puncturing of the symbol in the symbol group and '0' indicates puncturing of the symbol in the symbol group.

79. (New) The method of claim 78, wherein the symbol groups corresponding to data bits with indices 2j are punctured using the first puncturing pattern of '1101'and the symbol groups corresponding to data bits with indices 2j+1 are punctured using the second puncturing pattern of '1101', where '1' indicates no puncturing of the symbol in the symbol group and '0' indicates puncturing of the symbol in the symbol group.

80. (New) The method of claim 78, wherein the symbol groups corresponding to data bits with indices 2j are punctured using the first puncturing pattern of '1011'and the symbol groups

corresponding to data bits with indices 2j+1 are punctured using the second puncturing pattern of '1110', where '1' indicates no puncturing of the symbol in the symbol group and '0' indicates puncturing of the symbol in the symbol group.

81. (New) The method of claim 75, wherein if a code rate of 1/5 is selected, the symbol groups with indices 2j are punctured using the first puncturing pattern of '11101'and the symbol groups with indices 2j+1 are punctured using the second puncturing pattern of '11011', where '1' indicates no puncturing of the symbol in the symbol group and '0' indicates puncturing of the symbol in the symbol group.

82. (New) The method of claim 81, wherein the information bits include tail bits, and symbol groups with indices 2j and 2j+1 corresponding to the tail bits are punctured using a third puncturing pattern of '11011', where '1' indicates no puncturing of the symbol in the symbol group and '0' indicates puncturing of the symbol in the symbol group.

83. (New) The method of claim 46, wherein the prescribed ratio is 8/3.

84. (New) The method of claim 43, wherein the method is implemented during variable data rate mode and/or flexible data rate mode.

85. (New) The method of claim 43, wherein the method is used for radio configuration (RC)4 of a physical channel for the forward link.

86. (New) The device of claim 56, wherein the method is implemented during flexible data rate mode and/or variable data rate mode.

87. (New) The device of claim 59, wherein the prescribed ratio is 8/3.

88. (New) The method of claim 56, wherein the adapted prescribed code rate of the encoder is one of 1/2, 1/3, 1/4, and 1/5.

89. (New) The method of claim 88, wherein 'N' is a size of an interleaver, 'I' is a number of information bits per frame, and the prescribed code rate of the encoder is adapted to 1/3 when a prescribed ratio $<N/I\leq 3$, 1/4 when $3<N/I\leq 4$, and 1/5 when $N/I>4$.

90. (New) The method of claim 56, wherein the encoder is a turbo encoder with a maximum code rate of 1/5.

91. (New) The method of claim 56, wherein coded bit puncturing is enabled for coded bit groups having indices 2j and 2j+1 if $(j \bullet k) \bmod J < K$, wherein 'I' is a number of information bits per frame, 'J' equals $\lfloor I/2 \rfloor$, 'N' is a size of the interleaver, 'K' equals $\lfloor (L-N)/2 \rfloor$, and 'L' is a number of coded bits, and wherein each of the coded bit groups comprises L/I coded bits.

92. (New) The method of claim 91, wherein the information bits include data bits and a pattern used to puncture the coded bit group 'i' for a 1/3 turbo code rate when $2I < N \leq 3I$ is given by $P_{(i \bmod 2)}$, wherein 'i' is an index of the coded bit groups and ranges from 0 to I-1, and wherein the pattern to puncture coded bit groups corresponding to coded bits of data bits is '110' for P_0 and '101' for P_1, where '1' indicates no puncturing of the coded bit in the coded bit group 'i' and '0' indicates puncturing of the coded bit in the coded bit group 'i'.

93. (New) The method of claim 92, wherein the information bits further include tail bits,

and a pattern to puncture symbol groups corresponding to coded bits of tail bits is '101' for P_0 and '101' for P_1.

94. (New) The method of claim 91, wherein the information bits include data bits, and a pattern used to puncture the coded bit group 'i' for a 1/4 turbo code rate when $3I < N \leq 4I$ is given by $P_{(i \bmod 2)}$, wherein 'i' is an index of the coded bit groups and ranges from 0 to I-1, and wherein the pattern to puncture coded bit groups corresponding to coded bits of data bits is '1011' for P_0 and '1110' for P_1, where '1' indicates no puncturing of the coded bit in the coded bit group 'i' and '0' indicates puncturing of the coded bit in the coded bit group 'i'.

95. (New) The method of claim 94, wherein the information bits further include tail bits, and a pattern to puncture coded bit groups corresponding to coded bits of tail bits is '1011' for P_0 and '1011' for P_1.

96. (New) The method of claim 91, wherein the information bits include data bits, and a pattern used to puncture the coded bit group 'i' for a 1/5 turbo code rate when $4I < N \leq 5I$ is given by $P_{(i \bmod 2)}$, wherein 'i' is an index of the coded bit groups and ranges from 0 to I-1, and wherein the pattern to puncture coded bit groups corresponding to coded bits of data information bits is '11101' for P_0 and '11011' for P_1, where '1' indicates no puncturing of the coded bit in the coded bit group 'i' and '0' indicates puncturing of the coded bit in the coded bit coded bit group 'i'.

97. (New) The method of claim 96, wherein the information bits further include tail bits and a pattern to puncture coded bit groups corresponding to coded bits of tail bits is '11011' for P_0 and '11011' for P_1.